

# Cauliflower



## Care During Handling

Care during Handling facilitates the rapid movement of fresh produce within the value chain. Fresh produce must be properly handled during transportation to minimise mechanical damage, temperature abuse, taint, and contamination by food-borne pathogens.

Transport systems are used to haul cauliflower from farm to collection centre and from collection centre to wholesale market and finally to retail markets. Because of their inherent perishable nature, the harvested cauliflower must reach the destination market in short period of time, necessitating rapid and reliable transport systems.

Losses incurred during transport are a complex problem which is not directly related to the transport vehicle, but affected by the length of the trip, number of loading and unloading points, road quality, temperature of the environment and availability of handling aids.

## Freshness Facts



**OPTIMUM CARRYING TEMPERATURE**  
0°C to +1°C



**HIGHEST FREEZING POINT**  
-0,8°C



**ACCEPTABLE PRODUCT TEMP. AT LOADING INTO CONTAINERS**

Max. 2°C above carrying temperature



**OPTIMUM HUMIDITY**  
>95%

Ventilation setting for containers	60 m <sup>3</sup> /hr
Storage life	2-4 weeks
Climacteric / non-climacteric	Non-climacteric
Ethylene production	Very low
Ethylene sensitivity	High
Modified / controlled atmosphere	2%-3% O <sub>2</sub> ; 3%-4% CO <sub>2</sub>
Potential benefits	Slight



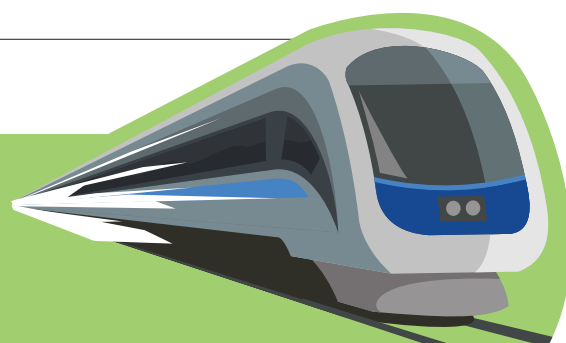
## Packaging

The packaging materials commercially available for use in handling and transporting fresh produce like cauliflower include Bamboo baskets or 'duko' (Available in eastern part of India), wooden crate, returnable and stackable plastic crates, polyethylene or polypropylene plastic bags, sacks made from plastic twine, and cardboard box/cartons. Carton boxes are mainly for export but used carton boxes find their way in the packaging

fresh produce for local marketing. Pallets should be used for air cargo and for highway transport.

In crates, the Cauliflower should be kept like its curd should face upward to prevent it from bruises. Cauliflower Leaf should be used in the crate to protect it from mechanical damage. While packing, the curd should be fully dry without the dew on its surface. No direct exposure of produce after harvest; else, it turns the curd color to yellow.

## Transportation



Transportation is done via Refrigerated and non-refrigerated vehicles. For highway transport - containers for air, rail, and highway transport, and for lift-on/lift off sea transport. If available, refrigerated transport should be used especially for long distances. In non-refrigerated transport, evaporative cooling, and MA (Modified atmospheric) techniques can be applied. Break bulk refrigerated vessels should be used for handling palletised loads. Other measures - immobilize stacks of packages by bracing and/or strapping; careful handling of packages; air suspension of trucks to reduce road shock and vibration. If the leaves are attached to the flower during harvest, it protects the curd. In some areas in Jharkhand, it is transported to the local regions by tying these leaves only, which helps preserve the curd and maintain its freshness.

Horse carts, donkeys, Wheelbarrows, and carts should be used for transport over short distances of 1-8 Km. Compatibility in terms of temperature, ethylene production and sensitivity should be considered. Wet and dry produce items must be transported in separate mixed loads to avoid transfer of contamination from wet to dry produce. To prevent contamination by foodborne pathogens, transport systems should follow good sanitation practices, ensure proper temperature and RH management, and minimise potential damage to the produce. Vehicles should be cleaned routinely to remove decaying remains of produce.

**For the cauliflower curds to arrive at their destination in good condition, proper transport practices should be observed:**

**Gentle handling of produce during loading and unloading; they should not be dropped or thrown on to each other.**

**Pressure should not be applied at the top of packages of cauliflower during transport.**

**Containers should be placed at the bottom of the stack to allow stacking to a greater height.**

**Direct exposure to sun must be avoided.**

**Adequate space must be provided between stack to allow air circulation.**

**Light coloured package material to be used as cover to reflect heat.**

**Four -wheeled hand trolleys should be used to minimize damage during loading and transfer of produce packed in plastic crates.**